

EFFECT OF IRRIGATION SYSTEM AND PLANTING PATTERN, ON YIELD AND QUALITY OF SUGAR BEET UNDER NORTH DELTA CONDITIONS

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ABSTRACT

Two field experiments were carried out at Biyala region during 2004/05 and 2005/06 winter seasons to study the effect of two irrigation systems; i.e., improved and traditional mesqa, and, three sowing patterns, i.e., ridges, platforms and rows on yield and quality of sugar beet. The experimental design was a split-plot, with four replications, where the irrigation systems were allocated to the main plots and planting patterns were arranged in the sub-plots.

The results indicated that the improved mesqa irrigation system gave the highest values of root length and diameter, root and top yields, root/top ratio, gross and white sugar percentage and yields, while traditional mesqa obtained the lowest value. Also, the maximum optimum irrigation efficiency (lopt) was recorded under improved mesqa method compared with traditional mesqa method during the two seasons of study.

Beet sowing in ridge or platform patterns produced the highest values of all studied traits, while the highest top yield was obtained by using row pattern.

It might be seen from data obtained that improved mesqa irrigation system saved water by 14.77 and 17.98%, whereas the platform pattern saved water by 18.82 and 19.87% in the first and the second seasons, respectively.